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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/764,751	01/26/2004	Leonard C. Pipes	ITL.0851D1US (P15016D)	8763

7590 08/10/2005

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EXAMINER
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ISAAC, STANETTA D

ART UNIT	PAPER NUMBER
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2812

DATE MAILED: 08/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/764,751

Applicant(s)

PIPES ET AL.

Examiner

Stanetta D. Isaac

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 31 May 2005.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 22-27 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 22-27 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

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### DETAILED ACTION

This Office Action is in response to the amendment filed on 5/31/05. Currently, claims 22-27 are pending.

#### *Specification*

The specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

#### *Claim Rejections - 35 USC § 112*

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 22-27 recites the limitation "said implanted dielectric having a higher etch rate than **the unimplanted dielectric**" in lines 7-8. There is insufficient antecedent basis for this limitation in the claim.

#### *Claim Rejections - 35 USC § 102*

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 22-27 are rejected under 35 U.S.C. 102(b) as being anticipated by Park US Patent 5,902,127.

Park discloses the semiconductor apparatus as claimed. See figures 1A-5B, with emphasis on figures 4A-4E, and corresponding text where Park teaches an apparatus comprising:

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a substrate **40** (figure 4A; col. 4, lines 21-24); a barrier layer **44** over said substrate (figure 4A; col. 4, lines 24-29); a trench **46** etched into said substrate through said barrier (figure 4A; col. 4, lines 29-33); a dielectric **48/50** in said trench (figures 4B-4C; col. 4, lines 34-47); and a plurality of ions implanted **Rp1** into said dielectric layer and said barrier layer, said substrate being substantially free of said ions, said implanted dielectric having a higher etch rate than the unimplanted dielectric (figure 4D; col. 4, lines 48-61).

Pertaining to claim 23, Park teaches the apparatus wherein the dielectric comprises silicon oxide (col. 4, lines 34-41).

Pertaining to claim 24, Park teaches the apparatus wherein said dielectric is damaged by said implanted ions (col. 4, lines 48-58, *Note*: the Examiner considers it to be inherent that the dielectric is damaged by the plurality of implanted ions, since the implanted ions are within in the oxide layers).

Pertaining to claim 25, Park teaches the apparatus wherein said barrier layer is formed on nitride (col. 4, lines 23-25).

Pertaining to claim 26, Park teaches the apparatus wherein said ions are selected from the group consisting of silicon, carbon, nitrogen, and oxygen (col. 4, lines 48-54, nitrogen).

Pertaining to claim 27, Park teaches the apparatus wherein the upper surface of said barrier layer and said dielectric are coplanar (col. 4, lines 62-67; col. 5, lines 1-8, *Note*: the Examiner takes the position that since the surface of the oxide layers are planarized using chemical mechanical polishing (CMP), and the barrier layer is later removed, it is inherent that the barrier layer and the dielectric are coplanar).

***Response to Arguments***

Applicant's arguments filed 5/31/05 have been fully considered but they are not persuasive. In response to the Remarks on page 3:

The Applicant raises the clear issue of whether Park suggests that the dielectric layer having implanted ion where the implanted dielectric has a higher etch rate than the unimplanted dielectric.

The Examiner takes the position that Park does teach that the implanted dielectric layer will have a higher etch rate than the unimplanted dielectric. Specifically, in col. 3, lines 35-40, Park teaches that the implanted nitrogen ions within the insulating layer can increase the etch rate of the insulating layer.

***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

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however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stanetta D. Isaac whose telephone number is 571-272-1671. The examiner can normally be reached on Monday-Friday 9:30am -6:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Lebentritt can be reached on 571-272-1873. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Stanetta Isaac  
Patent Examiner  
August 8, 2005

  
**MICHAEL LEBENTRITT**  
**SUPERVISORY PATENT EXAMINER**